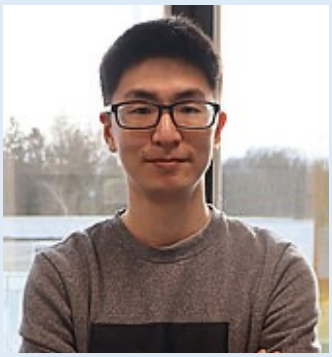
明治大学 国際交流基金事業「研究者交流支援制度」講演会

Myonuclear heterogeneity in health and disease

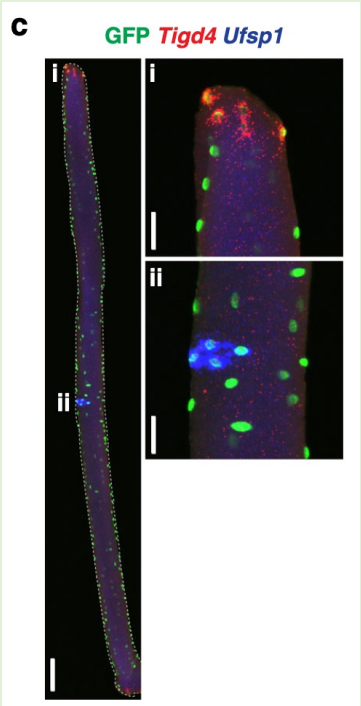
2025年12月2日(火) 16:00-
明治大学生田キャンパス第一校舎6号館 6-204

講師紹介：Kim Minchul 博士



Kim Minchul博士は骨格筋生物学において国際的に分野をリードする若手研究者であり、フランスIGBMCでグループリーダー（PI）として研究チームを率いている。Kim博士らは2020年に発表した論文で、筋腱接合部や神経金接合部を含む筋線維核の多様な遺伝子発現を明らかにしたことで、骨格筋研究は新たな段階に入った。Kim博士は新規のマウスモデルや遺伝学的ツールを開発して筋腱接合部の機能解析を進めており、本講演でも最新の成果を紹介いただく。

講演詳細（使用言語：英語・日本語）



Unlike most cells in nature, skeletal muscle cells harbor hundreds to thousands of nuclei within a shared cytoplasm. This unique cellular architecture raises numerous intriguing questions about this vital cell type. I will discuss some of our recent work on understanding the special ways muscle cells operate.

First, I will focus on one particular muscle domain, the muscle-tendon junction (MTJ). The MTJ is the terminal part of the muscle cell where contractile force is transmitted through the tendon and is a major site of injury. I will discuss how transcriptional and post-transcriptional mechanisms govern the formation and maintenance of this muscle domain, believing that similar principles should apply to other muscle domains.

Secondly, I will present our work on a myonuclear population identified in a dystrophic muscle, which is involved in repairing muscle damages by physiological contraction. This work underscores how investigating myonuclear heterogeneity in diseased muscles can shed new insights into how normal muscle cells cope with various stresses and introduce new therapeutic nodes.

Finally, I will present our recent development of various genetic tools to manipulate specific nuclear subtypes within the muscle cell. Previously existing tools in the field targeted entire myonuclei without any spatial precision, hampering in-depth investigation of muscle domains. I will discuss how our new methodologies can change the way we study this challenging cell type in both healthy and pathological situations.

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